

REMARKS

Claims 1 and 208-233 are all the claims pending in the application. This Amendment amends claims 1, adds claims 208-233, cancels claims 2-4, 6, 8-12, 16, 17, 23, 25, and 189-197, and addresses each point of rejection raised by the Examiner. Favorable reconsideration is respectfully requested.

Applicants thank the Examiner for indicating that the drawing are accepted, acknowledging the claim for foreign priority under 35 U.S.C. § 119, and noting that the priority documents have been received.

Applicants call the Examiner's attention to the Information Disclosure Statement filed November 8, 2001, identifying references that were submitted in parent application 09/603,437. Applicants respectfully requests an initialed copy of the Form PTO-1449 to confirm that the Examiner has considered the listed documents.

Claims 2-4, 6, 8-12, 16, 17, 23, 25, and 189-197 have been cancelled, such that only claim 1 is pending of the rejected claims. Claim 1 is amended to include the (11 $\bar{2}$ 0) growth plane limitation formerly included in claim 12. Accordingly, Applicants' remarks focus on the Examiner's reasons for rejecting claims 1 and 12.

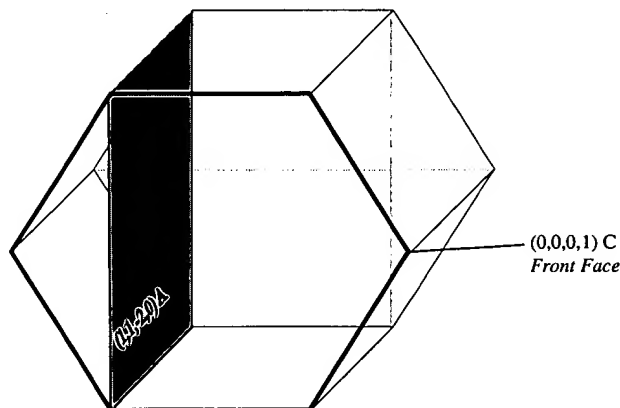
Claims 1 and 12 are rejected under 35 U.S.C. § 103(a) over WO 97/11518 to Tanaka *et al.* ("Tanaka") in view of U.S.P. 5,239,188 to Takeuchi *et al.* ("Takeuchi").

Tanaka discloses a method of forming reduced defect density GaN crystal using an insulator mask. GaN buffer layers are grown by MOVPE on the (0001) plane of sapphire substrate 1.

Applicants submit that the teachings of Tanaka do not suggest, or otherwise support, growth on the (11 $\bar{2}$ 0) plane. The Examiner argues that swapping planes is optimization involving only routine experimentation, as the (11 $\bar{2}$ 0) plane was known in the art. However, the mere existence of the plane does not suggest the desirability of using it. This is especially true when the structural difference between planes and the specific teachings of Tanaka are considered.

For the growth methods disclosed in Tanaka, switching these crystal planes is anything but routine, as the inter-atomic spacing and crystal orientation changes completely. The (0001)C

plane (*i.e.*, Tanaka), forms a smooth surface having a hexagonal pattern, whereas the $(11\bar{2}0)$ A plane, (*i.e.*, claim 1) does not. The relative orientations in a unit cell are illustrated below:



Tanaka discloses that by growing hexagonal crystals off the C-plane, defects primarily propagate along the C-axis, but do not multiply along other axes. *See* column 4, lines 44-54. This is attributed to growth of *hexagonal columns*. *See* column 5, lines 44-63 with Fig. 2; column 7, lines 1- 8 with lines 52-59 and Fig. 4E. *See also* column 15, line 44 to column 16, line 17.

In view of the emphasis in Tanaka on growing off the C-plane, all of the features in Tanaka being attributed to the growth of *hexagonal columns*, and the clear structural differences between the C-plane and the A-plane (*i.e.*, hexagonal columns being a feature of C-plane growth), Applicants submit that one skilled in the art would not be motivated try and “optimize” Tanaka by utilizing growth off the $(11\bar{2}0)$ plane.

Nor does Takeuchi offer any support for modifying Tanaka to grow off the $(11\bar{2}0)$ plane.

In view of these remarks, reconsideration and allowance of claim 1 are respectfully requested.

Applicants add new method claims 208-220 and new product claims 221-233. No new matter is added. Entry and consideration of these claims is respectfully requested.

In view of the above, reconsideration of this application is now believed to be in order, and such action is hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

Amendment Under 37 C.F.R. § 1.111
Application No. 09/986,332

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,



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Date: June 18, 2003

APPENDIX

Version With Markings To Show Changes Made

IN THE CLAIMS:

Claims 2-4, 6, 8-12, 16, 17, 23, 25, and 189-197 are canceled.

The claims are amended as follows:

1. (Amended) A nitride semiconductor growth method comprising the steps of:

(a) forming a first selective growth mask on a support member made up of a dissimilar substrate made of a material different from a nitride semiconductor and having a major surface forming a $(11\bar{2}0)$ plane, and an underlayer made of a nitride semiconductor formed on the major surface of the dissimilar substrate, said first selective growth mask having a plurality of first windows selectively exposing an upper surface of the underlayer of the support member; and

(b) growing nitride semiconductor portions from the upper surface portions[;] of the underlayer[;] which are exposed from the windows, by using a gaseous Group 3 element source and a gaseous nitrogen source, until the nitride semiconductor portions grown in the adjacent windows combine with each other on an upper surface of said selective growth mask.

Claims 208-233 are added as new claims.